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| 09/580,865 | 05/30/2000 | Brian Unitt | 476-1922 | 1155 |

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| EXAMINER | |
|---|---|
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| 2633 | |

DATE MAILED: 01/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. 09/580,865 | Applicant(s) UNITT ET AL. | |
|---|---|---|---|
| | Examiner Hanh Phan | Art Unit 2633 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *30 May 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

## DETAILED ACTION

1. In claim 21, the phrase "at least on of the subscriber station" should be changed to -- at least one of the subscriber station--.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 16-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 16 recites the limitations "a common input port arranged to receive **both said signal on said first optical frequency and said signal on said second frequency**" and "an optical frequency splitter arranged to provide said signal on **said first frequency to said transmission detector and said signal on said second frequency to said receiver**" in lines 3-7. There are insufficient antecedent bases for these limitations in the claim.

5. Claims 12 and 13 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

In claims 12 and 13, the limitaions "A telecommunications network comprising a passive optical network" and "A telecommunications network comprising a passive optical network" as being of improper dependent form for failing to further limit the subject matter of a previous claim 5.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351 (a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-4, 14, 20, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Kavehrad et al (U.S. Patent No. 4,701,909).

Regarding claim 1, referring to figure 1, Kavehrad teaches a passive optical coupler (12) comprising: a plurality of input and output port pairs (15, 16), and arranged to couple each of said input ports (15) to the output port of each other input and output port pair (col. 3, lines 12-25).

Regarding claim 2, referring to figure 1, Kavehrad teaches a passive optical coupler (12) comprising: a plurality of input ports (15) each having a corresponding output port (16); wherein each input port (15) is coupled to all output ports other than its corresponding output port (col. 3, lines 12-25).

Regarding claims 3 and 4, Kavehrad teaches a communications access network comprising a passive optical coupler (12)(Fig. 1, col. 3, 12-25).

Regarding claims 14 and 22, referring to figure 1, Kavehrad teaches an optical transceiver (14, 17) arrangement comprising: a transmitter (14) arranged to transmit data on a first optical frequency (i.e., a lightwave signal, col. 3, lines 12-25); a transmission detector (21)(i.e., collision detector) arranged to receive, on said first optical frequency (i.e., a lightwave signal), signals from a network indicative of a transmission by another subscriber station on said first frequency; a medium access logic unit (13)(i.e., transmitter and control logic) arranged to prevent transmission on said first frequency (i.e., a lightwave signal) while said transmission detector (21)(i.e., collision detector) is detecting said signals from a network indicative of a transmission by another subscriber station on said first frequency (col. 3, lines 12-67, and col. 4, lines 1-29).

Regarding claim 20, Kavehrad teaches a communication network comprises an optical transceiver (Fig. 1, col. 2, lines 18-25) .

8. Claims 1-4 are rejected under 35 U. S. C. 102(b) as being anticipated by Ota (U. S. Patent No. 5,854,700).

Regarding claim 1, referring to figure 1, Ota teaches a passive optical coupler (25) comprising: a plurality of input and output port pairs (24), and arranged to couple each of said input ports (24) to the output port of each other input and output port pair (col. 1, lines 50-67, and col. 2, lines 1-8).

Regarding claim 2, referring to figure 1, Ota teaches a passive optical coupler (25) comprising: a plurality of input ports (24) each having a corresponding output port; wherein each input port (24) is coupled to all output ports other than its corresponding output port (col. 1, lines 58-67, and col. 2, lines 1-8).

Regarding claims 3 and 4, Ota teaches a communications access network comprising a passive optical coupler (25)(Fig. 1, col. 1, lines 50-59).

9. Claims 14, 15, 20, and 22 are rejected under 35 U.S.C. 102(e) as being anticipated by Hortensius et al (U.S. Patent No. 5,917,629).

Regarding claims 14 and 22, referring to figure 1, Hortensius teaches an optical transceiver arrangement comprising: a transmitter (24) arranged to transmit data on a first optical frequency (i.e., wavelength $\lambda 2$); a transmission detector (30)(i.e., collision detector) arranged to receive, on said first optical frequency, signals from a network indicative of a transmission by another subscriber station on said first frequency (col. 4, lines 34-45); a medium access logic unit (28)(i.e., CSMA/CD protocol processor) arranged to prevent transmission on said first frequency while said transmission detector is detecting said signals from a network indicative of a transmission by another subscriber station on said first frequency (col. 5, lines 3-17).

Regarding claim 15, Hortensius teaches the optical transceiver further comprises: a receiver (20) arranged to receive data on a second optical frequency (i.e., wavelength λ1)(Fig. 1).

Regarding claim 20, Hortensius teaches a communication network comprises an optical transceiver (Fig. 1, col. 2, lines 18-25) .

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be +negatived by the manner in which the invention was made.

11. Claims 5-7, 10-13, 15, 21, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kavehrad et al (U.S. Patent No. 4,701,909) in view of Wright et al (U.S. Patent No. 6,411,410).

Regarding claims 5, 12, 13, 21, and 23, referring to figure 1, Kavehrad teaches a passive optical network arrangement comprising:

a plurality of subscriber stations (11);

a passive optical network (12) providing optical connectivity from each of said stations to each other station;

wherein said subscriber stations (11) are arranged to transmit on a common optical frequency (i.e., a lightwave signal, col. 3, lines 12-25); and

each of the subscriber stations (11) is arranged to detect when another of the subscriber stations is transmitting on the common optical frequency (i.e., a lightwave signal) over the passive optical network (12), and in which the passive optical network (12) comprises a passive optical coupler comprising a plurality of input and output port pairs (15, 16), and arranged to couple each of said input ports to the output port of each other input and output port pair (col. 3, lines 12-67, and col. 4, lines 1-29).

Kavehrad differs from claims 5, 12, 13, 21, and 23 in that he does not specifically teach a headend station transmitting a second frequency different from the first frequency transmitted by the subscriber stations. However, Wright teaches a headend station transmitting a second frequency different from the first frequency transmitted by the subscriber stations (Fig. 1, col. 6, lines 12-30). One skilled in the art would clearly have recognized that providing a headend station transmitting a second frequency different from the first frequency transmitted by the subscriber stations would have allowed to provide a communications network including a central office, a passive optical network, and subscriber stations and reduce the interference between signals. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the headend station transmitting a second frequency different from the first frequency transmitted by the subscriber stations as taught by Wright in the system of Kavehrad in order to provide a communications network including a central office, a passive optical network, and subscriber stations and reduce the interference between signals.

Regarding claim 6, the combination of Kavehrad and Wright teaches the subscriber station communicates with the head-end station using a carrier sense/collision detection protocol (col. 2 of Kavehrad, lines 6-28, col. 1, lines 34-67).

Regarding claim 7, the combination of Kavehrad and Wright teaches the protocol is an Ethernet protocol (col. 1 of Kavehrad, lines 34-67, col. 2, lines 6-28).

Regarding claim 10, the combination of Kavehrad and Wright teaches the passive optical network comprise a passive star coupler connected by means of point-to-point optical links to each of the stations (Fig. 1 of Kavehrad, col. 3, lines 12-25).

Regarding claim 11, the combination of Kavehrad and Wright teaches the passive optical network provides no optical connectivity from each of said stations back to itself (Fig. 1 of Kavehrad, col. 3, lines 12-25).

Regarding claim 15, the combination of Kavehrad and Wright teaches the optical transceiver further comprises: a receiver arranged to receive data on a second optical frequency (i.e., wavelength $\lambda 1$, Figs. 1 and 2 of Wright).

12. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kavehrad et al (U.S. Patent No. 4,701,909) in view of Wright et al (U.S. Patent No. 6,411,410) and further in view of Ota (U.S. Patent No. 5,854,700).

Regarding claim 9, the combination of Kavehrad andWright differs from claim 9 in that it does not specifically teach the passive optical network provides optical connectivity from each of said stations back to itself. However, Ota teaches a passive optical network provides optical

connectivity from each of said stations back to itself (col. 2, lines 14-15 and lines 23-24). One skilled in the art would clearly have recognized that allowing a passive optical network provides optical connectivity from each of said stations back to itself would have allowed to increase the level of a receiving signal in each node. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the passive optical network provides optical connectivity from each of said stations back to itself as taught by Ota in the system of the combination of Kavehrad and Ota in order to increase the level of a receiving signal in each node.

13. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kavehrad et al (U.S. Patent No. 4,701,909) in view of Wright et al (U.S. Patent No. 6,411,410) and further in view of Russell et al (U.S. Patent No. 6,496,519).

Regarding claim 8, the combination of Kavehrad and Wright differs from claim 8 in that it does not specifically teach the protocol operates at bit rates of the order of 1 Gbit/s or above. However, Russell teaches the protocol operates at bit rates of the order of 1 Gbit/s (col. 2, lines 7-13). One skilled in the art would clearly have recognized that allowing the protocol operates at bit rates of the order of 1 Gbit/s or above would have allowed to provide a high speed communication system. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the protocol operates at bit rates of the order of 1 Gbit/s as taught by Russell in the system of the combination of Kavehrad and Wright in order to provide a high speed system in the optical network.

14. Claims 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kavehrad et al (U.S. Patent No. 4,701,909) in view of Saraswat et al (U.S. Patent No. 6,417,943).

Regarding claim 16, Kavehrad differs from claim 16 in that he does not specifically teach the station comprises a common input port arranged to receive both said signal on said first optical frequency and said signal on said second frequency and an optical frequency splitter arranged to provide said signal on said first frequency to said transmission detector and said signal on said second frequency to said receiver. However, Saraswat teaches a station comprises a common input port arranged to receive both said signal on said first optical frequency and said signal on said second frequency and an optical frequency splitter arranged to provide said signal on said first frequency to said first receiver and said signal on said second frequency to second receiver (Figs. 1 and 2, col. 4, lines 22-25). One skilled in the art would clearly have recognized that providing a single input port and an optical demultiplexer in the station would have allowed to reduce subscriber equipment and network cost and separate the signals into the individual signals. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the optical demultiplexer in the station as taught by Saraswat in the system of Kavehrad in order to reduce subscriber equipment and network cost and separate the signals into the individual signals.

Regarding claim 17, Kavehrad further teaches the indication comprises any non-zero signal on said first optical frequency (col. 3, lines 12-67, and col. 4, lines 1-29).

Regarding claims 18 and 19, it would have been obvious to obtain a transmission detector comprises a simple light detector and the light detector is a PIN diode in order to easy to detect a lightwave and convert the light into the electricity.

15. Claims 5-7, 9-13, 21, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wright et al (U.S. Patent No. 6,411,410) in view of Ota (U.S. Patent No. 5,854,700).

Regarding claims 5, 21, and 23, referring to figure 2, Wright teaches a passive optical network arrangement comprising: a head-end station (12)(i.e., OLT); at least one subscriber station (ONU1-ONU5); a passive optical network (6)(i.e., a passive optical 6 including optical fibers 8 and an optical splitter 10)(col. 6, lines 16-17) providing optical connectivity from each of said stations to each other station; wherein said subscriber stations (ONU1-ONU5) are arranged to transmit on a common optical frequency (i.e., wavelength $\lambda x$) distinct from that on which said head-and station is arranged to transmit (i.e., wavelengths $\lambda 1$ and $\lambda 2$)(col. 6, lines 12-30).

Wright differs from claims 5, 21, and 23 in that he does not specifically teach each of the subscriber stations is arranged to detect when another of the subscriber stations is transmitting on the common optical frequency over the passive optical network, and in which the passive optical network comprises a passive optical coupler comprising a plurality of input and output port pairs, and arranged to couple each of said input ports to the output port of each other input and output port pair. However, Ota teaches each of the subscriber stations is arranged to detect when another of the subscriber stations is transmitting on the common optical frequency over the passive optical network, and in which the passive optical network comprises a passive optical coupler

comprising a plurality of input and output port pairs, and arranged to couple each of said input ports to the output port of each other input and output port pair (Figs. 1 and 5, col. 8, lines 45-62, col. 9, lines 22-35 and col. 1, lines 15-42). One skilled in the art would clearly have recognized that allowing each of the subscriber stations is arranged to detect when another of the subscriber stations is transmitting on the passive optical network would have allowed to detect a collision on the network. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate each of the subscriber stations is arranged to detect when another of the subscriber stations is transmitting on the passive optical network as taught by Ota in the system of Wright in order to detect a collision on the network.

Regarding claim 6, the combination of Wright and Ota teaches the subscriber station communicates with the head-end station using a carrier sense/collision detection protocol (col. 1 of Ota, lines 15-42).

Regarding claim 7, the combination of Wright and Ota teaches the protocol is an Ethernet protocol (col. 1 of Ota, lines 21-23).

Regarding claim 9, the combination of Wright and Ota teaches the passive optical network provides optical connectivity from each of said stations back to itself (col. 2 of Ota, lines 14-15 and lines 23-24).

Regarding claim 10, the combination of Wright and Ota teaches the passive optical network comprise a passive star coupler connected by means of point-to-point optical links to each of the stations (Fig. 1 of Ota, col. 1, lines 50-67, and col. 2, lines 1-8).

Regarding claim 11, the combination of Wright and Ota teaches the passive optical network provides no optical connectivity from each of said stations back to itself (col. 3 of Ota, lines 10-18).

Regarding claims 12 and 13, it would have been obvious to obtain a telecommunications access network or a telecommunications network in order to transmit messages from one location to another over a distance by telephone, telegraph and radio.

16. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wright et al (U.S. Patent No. 6,411,410) in view of Ota (U.S. Patent No. 5,854,700) and further in view of Russell et al (U.S. Patent No. 6,496,519).

Regarding claim 8, the combination of Wright and Ota differs from claim 8 in that it does not specifically teach the protocol operates at bit rates of the order of 1 Gbit/s or above. However, Russell teaches the protocol operates at bit rates of the order of 1 Gbit/s (col. 2, lines 7-13). One skilled in the art would clearly have recognized that allowing the protocol operates at bit rates of the order of 1 Gbit/s or above would have allowed to provide a high speed communication system. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the protocol operates at bit rates of the order of 1 Gbit/s as taught by Russell in the system of the combination of Wright and Ota in order to provide a high speed system in the optical network.

17. Claims 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hortensius et al (U.S. Patent No. 5,917,629) in view of Saraswat et al (U.S. Patent No. 6,417,943).

Regarding claim 16, Hortensius differs from claim 16 in that he does not specifically teach the station comprises a common input port arranged to receive both said signal on said first optical frequency and said signal on said second frequency and an optical frequency splitter arranged to provide said signal on said first frequency to said transmission detector and said signal on said second frequency to said receiver. However, Saraswat teaches a station comprises a common input port arranged to receive both said signal on said first optical frequency and said signal on said second frequency and an optical frequency splitter arranged to provide said signal on said first frequency to said first receiver and said signal on said second frequency to second receiver (Figs. 1 and 2, col. 4, lines 22-25). One skilled in the art would clearly have recognized that providing a single input port and an optical demultiplexer in the station would have allowed to reduce subscriber equipment and network cost and separate the signals into the individual signals. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the optical demultiplexer in the station as taught by Saraswat in the system of Hortensius in order to reduce subscriber equipment and network cost and separate the signals into the individual signals.

Regarding claim 17, Hortensius further teaches the indication comprises any non-zero signal on said first optical frequency (col. 4, lines 46-67 and col. 5, lines 1-17).

Regarding claims 18 and 19, it would have been obvious to obtain a transmission detector comprises a simple light detector and the light detector is a PIN diode in order to easy to detect a lightwave and convert the light into the electricity.

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kim et al (U.S. Patent number 6,445,472) teaches optical fiber subscriber network.

Nakamura et al (U.S. Patent number 5,343,314) teaches optical fiber communication.

Kondo et al (U.S. Patent number 4,894,819) teaches data transmission method.

Hortensius et al (U.S. Patent number 5,917,629) teaches transceiver for extending a CSMA/CD network communication.

***Conclusion***

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Phan whose telephone number is (703)306-5840.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached on (703)305-4729. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4700.

JASON CHAN
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TECHNOLOGY CENTER 2600